wherever there is pain for which no simple explanation is forthcoming, the word rheumatic is at once used.

The treatment of these cases consists not in the administration of analgesic remedies, and especially not of the coal-tar products supposed to be specific antirheumatic remedies, but of gentle rubbing and massage and of limitation of the exercise of the patient in such a way as to prevent that overuse of the respiratory muscles that is sure to be called for if, with one lung practically at rest, the patient attempts any of the ordinary efforts that before were so easy of accomplishment.

The pain may be considerably modified, as a rule, by strapping the parts so as to limit the amount of movement; after this, of course, patients will have to be advised to rest as much as possible, keeping in the air, however, as the recent therapy of tuberculosis has shown this to be the very best remedy for the aches in the chest so often complained of by consumptives.

ORTHOSTATIC ALBUMINURIA AND MOVABLE KIDNEY.

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A variety of names has in the course of time been applied to that condition of albuminuria first described by Pavy as "cyclic." He laid stress on the fact that the albuminuria disappeared when the patient went to bed, and soon afterward Stirling pointed out that the albuminuria was induced by the adoption of the erect posture, and suggested the name "postural albuminuria." Still more descriptive was the term "orthotische albuminurie" introduced by Heubner, the idea of which is more pleasantly expressed by Merklen and Teissier as "albuminurie orthostatique." This name, orthostatic[1] albuminuria, will probably commend itself to the profession generally as being more descriptive and more agreeable to the ear than any of the others.

Orthostatic or cyclic albuminuria is a condition which must be clearly defined, owing to its being frequently confused with other forms of intermittent or so-called functional albuminuria. It is characterized by the appearance of albumin in the urine soon after the patient assumes the erect posture, as on rising from bed in the morning, and by its disappearance on his assuming the recumbent posture, as on going to bed. It is not accompanied by any definite evidences of organic renal disease, such as hæmaturia, tube casts, low specific gravity of the urine, cardiovascular disease, or retinal changes, nor has it ever been known to terminate in organic renal disease. On the other hand, it must be remembered that in the earlier stages of renal disease, albumin may be present only when the patient is out of bed and taking exercise. Such cases are not to be confused with those of orthostatic albuminuria, and can easily be distinguished by the above tests. So far my own experience has been that the most common form of the so-called "albuminuria of adolescence" is orthostatic albuminuria. Another form, described by Dr. Clement Dukes, is associated with a high-tension pulse, and must be put in a different category. In orthostatic albuminuria the pulse tension is normal or lowered, and there is a characteristic want of tone in the whole vascular system. It must always be remembered that in speaking of orthostatic albuminuria we are referring to a symptom and not to a disease. The symptom has been carefully studied by many, but the disease has not yet been definitely ascertained. The view most commonly accepted is that there is a disturbance in the central nervous system which produces vasomotor weakness in different parts of the body, and more especially in the kidneys.

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[1] From *ὀρθός* upright, and *ἵστημι* I stand.

I have written fully elsewhere on the etiology, the pathology, and the prognosis of orthostatic albuminuria, and have discussed the literature of the subject up to the year 1900.[1] In this paper I propose to confine my remarks to the association between orthostatic albuminuria and a movable condition of the kidney or kidneys during early adolescence.

Cases of Orthostatic Albuminuria and Movable Kidney.

CASE I.—F. B., female, aged seven years, was seen for the first time in March, 1895. She had been strong and healthy until two years previously, when she was seized with vomiting and severe pain in the region of the umbilicus. Similar attacks had occurred at intervals, with great prostration, weakness, and loss of flesh. The child was poorly nourished and of a highly nervous temperament, shy and emotional. Physical examination revealed no objective signs of disease, and it was not until October that albumin was detected in the urine, which was present only when the patient was out of bed. Repeated examination showed a characteristic condition of orthostatic albuminuria, without any evidences of organic or renal disease. Two years later (April, 1897) the patient again came under observation, at the age of nine years. She had suffered at intervals from lethargy, debility, abdominal pain, and headache. Seven months previously she had been seized with severe pain in the abdomen and vomiting. An acute illness of a week's duration followed, during the greater part of which she was delirious, and after which she was left in a very exhausted condition, with pain and tenderness along the spine. A diagnosis of meningitis had been made, but the rapid disappearance of all nervous symptoms seemed to disprove this. Examination of the urine showed the persistence of orthostatic albuminuria. Two years later (April, 1899) she was again seen at the age of eleven years. She was kept in the recumbent position for five days, and during that time no albumin was present in the urine. Four hours after rising the urine passed was found to contain a large amount of albumin.

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[1] Cyclic Albuminuria. London, 1900.

A year later (May, 1900) she was practically in the same condition as regards the orthostatic albuminuria. At this time careful abdominal examination showed a large, freely movable body on the right side, extending three inches below the ribs, which was evidently the kidney. It was slightly tender, and when firm pressure was made the patient complained of pain in the umbilical region, similar to that which had characterized the acute abdominal attacks. The left kidney could be felt, but was not movable with respiration. There was marked abdominal aortic pulsation. These conditions have continued unchanged.

CASE II.—A. L., female, aged eleven years, was seen for the first time in November, 1896, suffering from headaches, vomiting, and swelling of the eyes. She had never had scarlet fever. A condition of orthostatic albuminuria was determined. At the age of fourteen and a half years (May, 1900) she was again seen, and the same condition of the urine was present. Menstruation had been established at the age of thirteen years. There was marked abdominal aortic pulsation. The right kidney was distinctly palpable, and moved freely with respiration and on manipulation. It seemed to be somewhat enlarged. The left kidney could not be felt.

CASE III.—F. F., female, aged eleven years, was seen in August, 1900. She had been suffering for six months from epistaxis, giddiness, and headache. For some six weeks she had been very languid and depressed, and her night's rest had been broken by dreams and somnambulism. A condition of orthostatic albuminuria was determined. There was a history of abdominal pain at times, but on physical examination the kidneys could not be felt. At a subsequent examination both kidneys were easily felt, moving freely with respiration, and apparently somewhat enlarged. After rest in the recumbent position for twenty-four hours the kidneys could not be palpated.

CASE IV.—E. G., female, aged ten years, was seen in August, 1900. She had been ailing for some time with vague pains in the limbs, and was easily tired and easily depressed. Her sleep was broken by night terrors. A condition of orthostatic albuminuria was determined. There was no marked abdominal pulsation, and the kidneys were not felt. In May, 1901, the following note was made: The abdominal wall is very thin and lax; a condition of general enteroptosis seems to be present; the liver descends markedly on respiration; the left kidney is distinctly palpable and moves with respiration; the right is not so distinctly felt; there is marked aortic pulsation in the abdomen. These conditions were confirmed at subsequent examinations during the following months. At times the right kidney was extremely movable. Orthostatic albuminuria had persisted unchanged.

CASE V.—J. W., male, aged twelve years, was seen in December, 1901. He had been attending the hospital at intervals for the previous five years. His symptoms had been headaches and vomiting, great lassitude, pains in the ankles and wrists, restless sleep, and attacks of severe pain in the left side of the abdomen. He was a well-nourished boy, with a very dark skin and pigmentation around the eyes. At times swelling of the eyelids and ankles had been noted. He was extremely nervous and emotional, weeping on the slightest provocation. Physical examination showed no signs of definite organic disease. There were marked pulsations of the abdominal aorta, but the kidneys could not be felt. Repeated examinations of the urine showed a condition of orthostatic albuminuria without any sign of organic renal disease. In June, 1901, it was noted on abdominal examination when the patient was lying down, that the right kidney was movable, passing one and one-half inches below the ribs on inspiration. It was not enlarged, or tender, or pulsating. The left kidney could not be palpated. Marked aortic pulsation was also present. These conditions have continued for some months without any appreciable change.

Case VI.—M. T., female, aged seven years, was seen in June, 1901. For two months she had been growing thin and becoming tired on the slightest exertion. Pain in the right side of the abdomen had been complained of, and "bilious attacks" with vomiting had occurred. The abdomen was soft, there was abnormal aortic pulsation, and a rounded mass could be felt in the right hypochondrium, freely movable, and not tender. This was evidently the right kidney, and it was situated in the position where pain had been several times localized. The kidney passed two inches below the ribs, was freely movable with respiration, and could be pushed up under the ribs. The left kidney could not be felt. Orthostatic albuminuria was determined, both serum and nucleo-albumin being present, sometimes in considerable amount. There were no casts and no evidences of organic renal disease. She has been under observation for some months, without any appreciable change in the above local conditions.

Case VII.—E. L., female, aged eight years, was seen in December, 1900. She had been complaining of pains in her legs and arms for some months, and had suffered from lassitude, headaches, and night-terrors. Her previous health had been good, apart from scarlet fever two years and gastric fever six months previously. Her mother suffered from dropsy and Bright's disease of six years' duration. A condition of orthostatic albuminuria was present, but the abdominal organs were normal on palpation. She came under observation again in September, 1901, suffering from the previous symptoms in an aggravated form. There was much albumin in the urine after rising. Both kidneys were easily palpable, moved freely with respiration, and were apparently enlarged.

Case VIII.—D. S., female, aged eleven years, was seen in February, 1901. She was complaining of general debility, pains between the shoulders, tiredness, and shortness of breath. The child was of an extremely nervous temperament, with an anæmic look, and large pupils. The abdomen was firm. There was marked aortic pulsation, and the right kidney could be felt. It was apparently enlarged, and moved with respiration, so that it could be fixed between the hands on deep respiration below the level of the ribs. The left kidney was not felt. A condition of orthostatic albuminuria was present, of which the only special point to note was that nucleo-albumin was very rarely present and was never more than a faint trace. The amount of serum albumin varied from day to day, but was usually such as to give a very definite reaction to all the tests. Strapping and bandaging of the abdomen were employed in this case, but without producing abolition of the albuminuria, although it appeared to diminish it at times.

Case IX.—L. N., female, aged ten years, was seen in February, 1901. She had been drowsy and out-of-sorts for some weeks, easily tired, and wanting to lie about. She was extremely sensitive and emotional, so that her mother could not understand what had come over her. She had had scarlet fever two years and diphtheria one year previously. She was a thin, tired-looking girl. Orthostatic albuminuria was present. The right kidney was palpable and was apparently somewhat enlarged. It was not freely movable with respiration, but could be pushed about easily. The left kidney was not felt.

Case X.—L. C., aged fourteen years, was seen in March, 1901. She had suffered from measles and whooping-cough, but had never had scarlet fever. Fourteen months previously she had an attack of chorea, and since then had never been quite well. She had complained of palpitation and shortness of breath and had become nervous and languid, so that her school lessons were a constant worry to her. The girl was of a spare build, with cold and blue hands and feet, and with an anæmic skin, which flushed very readily on excitement. There was a definite swelling in the neck, which had been noticed for a fortnight, and was due to a goitre. It varied in size from time to time, but was not pulsating, although there was abnormal pulsation in the carotids and in the abdominal aorta. The cardiac action was 100 per minute and regular. There was no murmur present, and pulse tracings showed nothing abnormal. Other signs of Graves' disease were not present. Orthostatic albuminuria was determined, the amount of albumin being usually small, but sometimes it amounted to 1 or 2 per cent., by Esbach's method. There were no evidences of organic renal disease in the shape of casts, arterial changes, etc. The right kidney appeared to be enlarged and was felt to be freely movable. The left could not be palpated. There was a history of attacks of abdominal pain, not specially localized, but none occurred while the patient was under observation.

Case XI.—F. A., female, aged thirteen years, was seen in June, 1901. She was brought to the hospital because of her being always tired, of headaches, and of pains in the legs and ankles. She was a well-nourished, rapidly growing, lethargic girl, with a marked condition of flat feet, which no doubt caused the pain complained of. Her eyelids were puffy, and the face generally was rather swollen. There was a slight cardiac enlargement to the left, with a soft (hæmic ?) murmur at the apex. On the left side of the abdomen a lump was felt in the situation of the left kidney, freely movable, not tender, not pulsating. It could easily be palpated between the two hands, and on deep inspiration passed downward and inward almost to the level of the umbilicus. It appeared to be an enlarged left kidney. On the right side of the abdomen a similar lump was felt, but not so large nor so freely movable. It had a rounded margin anteriorly, but was not tender, and could be readily palpated. A condition of orthostatic albuminuria was determined, with an excess of urates in the urine, but no signs of organic renal disease. There was no abnormal aortic pulsation, and no abdominal pain was complained of. No other signs of enteroptosis were present, and the abdominal wall was firm and unyielding in the erect posture.

On repeated examination it was found that on some days the kidneys were much more palpable than on others, and that they appeared to vary in size. Rest in bed always led to the disappearance of the albuminuria, but never of the kidneys.

CASE XII.—A. H., male, aged ten years, was seen in September, 1901. He had been having fainting attacks at school and complaining of pain in the belly. He suffered much from headaches, and was subject to a feeling of sickness on rising in the morning. There was no history of scarlet fever, and the only serious illness he had had was erysipelas, following a cut on his head eight years previously. On admission, a condition of orthostatic albuminuria was determined, although albumin was not invariably present after rising. There was no evidence of organic renal disease. He had occasional attacks of acute abdominal pain in the right hypochondrium, with nausea and faintness. The right kidney was quite palpable between the hands, and passed about two inches below the costal margin. There was no tenderness, and the kidney could be moved freely in all directions. The left kidney was not felt. At times the right kidney seemed to disappear, like the albumin, but it was not clear that these changes happened at the same time.

CASE XIII.—B. D., female, aged eleven years, was seen in October, 1901. She had suffered from convulsions since infancy, and had scarlet fever at the age of five years. She was a very nervous child, well nourished, and with a blotchy skin. Orthostatic albuminuria was present without any evidence of organic renal disease. The right kidney was palpable and freely movable. The left kidney was not felt. The effect of strapping and bandaging the abdomen was tried, and it was thought that the amount of albumin was diminished, although the albumin never disappeared entirely.

CASE XIV.—N. D., female, aged eleven years, was seen in September, 1901. She had been suffering from languor and tiredness, attacks of feverishness, with loss of appetite, headache, and abdominal pain. Her only serious illness had been diphtheria four years previously. There was no history of renal or rheumatic affection in the family. Orthostatic albuminuria was present. There was very marked pulsation in the abdominal aorta and the iliac arteries. The right kidney was enlarged, movable, and tender, being easily grasped by the two hands, and passing one and a half inches below the costal margin. Compression of the right kidney elicited pain, which the patient stated was the same as she had experienced in the attacks referred to. This pain had occurred when she was walking or running, never when she was lying down. The left kidney was not felt.

CASE XV.—R. S., female, aged eleven years, was seen in December, 1901. She was suffering from general debility, tiredness, headaches, and, as her previous health had been exceptionally good, the parents thought there must be some serious condition present to cause such a marked change. She was a bright, healthy looking, and well-nourished child. Orthostatic albuminuria was determined without any evidence of organic renal disease. Both kidneys were palpable and extremely movable; they could be definitely fixed below the ribs with the hand pushed in above them, and moved upward as easily above the lower costal margin. This range of mobility varied greatly from day to day, and sometimes it was the right kidney, sometimes the left which was the more movable. After running up and down stairs the kidneys were both very movable, and this condition persisted unchanged after twelve hours' rest in bed. When, however, the abdomen was firmly bandaged during the time she was up, the kidneys appeared afterward to be distinctly less mobile and less palpable. Pulsation in the abdominal aorta was extremely well marked. The abdominal wall was soft, but there was no evidence of general enteroptosis. Firm bandaging of the abdomen was thought to produce a diminution in the amount of albumin, but not its disappearance.

SUMMARY OF CASES. Total number of author's cases of orthostatic albuminuria in adolescence, 40; of these 10 were males and 30 were females. Total number of the above cases with movable kidney, 15, or 37.5 per cent.; of these 2 were males and 13 were females. Of these 15 cases, in 5 both kidneys were movable; in 10 the right kidney alone was movable; in none was the left kidney alone movable. In 9 there was abnormal pulsation of the abdominal aorta. In 10 cases abdominal pain was present: (1) referred to the right or left hypochondrium in 4 cases; (2) referred to the umbilical region in 1 case; (3) generalized in 2 cases; (4) taking the form of acute gastric crises, with vomiting, etc., in 3 cases.

The average age of these patients when first seen was ten and a half years, the youngest being seven and the oldest fourteen years.

These are the clinical data from which I have been led to infer that there is more than an accidental association between orthostatic albuminuria and movable kidney. In adult life the only affection in which I have found pure orthostatic albuminuria to be present is Graves' disease. Among the abdominal signs of Graves' disease abnormal pulsation of the aorta and movable kidney are frequently observed, and orthostatic albuminuria may be combined with these. I have notes of several examples of this association, but have omitted them from the above list, which is limited strictly to the period of early adolescence. The association of these three conditions during late childhood and early adolescence is the more striking, because, although statistics show that orthostatic albuminuria occurs most frequently at that period of life, a condition of movable kidney is very rarely met with.

As a matter of personal experience, I may mention that I have met with more cases of movable kidney among forty cases of orthostatic albuminuria than among all the other patients examined at a children's hospital during a service of fifteen years. In the above cases the renal mobility was not part of a general enteroptosis, for in only one was there specially noted an extremely flaccid state of the abdominal walls. As a rule, the muscular wall of the abdomen was extremely strong and firm, as it usually is in childhood. One has, therefore, to look for some other cause of the renal mobility. The question as to whether the normal kidney can or cannot be palpated through a normal abdominal wall would be differently answered by different authorities. In the above cases the term movable kidney is taken as implying that the kidney was moving, movable, and palpable. By moving, it is meant that during respiration there was a range of movement which was far beyond the physiological limit, and showed that the kidney had become a loose abdominal organ. By movable, it is meant that with the hand or hands the kidney could be pushed about in various directions, and, as a rule, most easily pushed upward under the ribs. By palpable, it is meant that the kidney could be grasped between the hands, one being placed in front of and the other behind the abdomen, and could be outlined in whole or in part by the compressing fingers. Such movable kidneys are detected on examination because they are also displaced, and are frequently rotated. This dislocation of the kidney is maintained even when the patient assumes the recumbent position, which is the only one in which a proper examination can be made. Sometimes the kidney sinks back into its normal situation after a longer or shorter period of recumbency, and in such a case its detection may be rendered difficult or impossible. The determination of enlargement of the kidney in addition to mobility is difficult, especially with firm abdominal walls of unknown thickness; but my own impression is that in some cases the kidney was decidedly enlarged, and in others it was not. Another point noted in connection with these cases was the ease with which the mobility of the kidney might be overlooked. At one time it was easily palpable, at another it was not so easily felt, while at a third it might not be felt at all. Thus, many of my earlier cases were under observation for some years without the condition being discovered, simply because repeated examination of the kidneys was not made. Rest in bed for a day or two seemed to lead to the disappearance of the kidney, as far as could be made out by manual examination. I have not been able to determine that the disappearance of albuminuria, which always follows rest in the recumbent posture, is necessarily accompanied by lessened mobility or size of the kidney, and in some cases this certainly did not take place.

The occurrence of attacks of abdominal pain was noted in ten of these cases. The onset of pain usually occurred when the patients were running or walking, and not when they were in bed, and relief followed the adoption of the recumbent posture, after a longer or shorter interval. When the patients were kept in bed entirely under careful supervision it was extremely rare to hear any complaint of abdominal pain, and when present it was invariably traceable to some cause apart from the kidney, usually to constipation. In some cases the pain was severe and accompanied by nausea, vomiting, and fainting, so that the attack resembled closely a "renal crisis" such as is commonly associated with movable kidney. In others the pain was less severe, and was described as a dull aching in one or other hypochondrium, or about the umbilicus. In a third class there was generalized abdominal pain, and while sometimes this was evidently associated with fecal accumulation in the large bowel, at other times such a condition was not present, and the kidney was apparently primarily responsible. Compression of the kidney between the two hands would sometimes produce the same pain as that which had been previously complained of. There was no evidence in any of these patients of the existence of hydronephrosis. It is well to remember that persistent pain in one or other hypochondrium or about the umbilicus, as well as sudden attacks of pain in these regions, may be due, even in the case of children, to movable kidney, and the discovery of such a condition may clear up a difficulty in diagnosis.

As there is at present no complete agreement, perhaps one should say no definite knowledge, as to the etiology and pathology of orthostatic albuminuria or of movable kidney, an explanation of the above facts must be tendered with considerable reserve. As already stated, it is wiser to regard orthostatic albuminuria as a symptom and not as a disease, and the same remark applies to movable kidney. In orthostatic albuminuria there is a general vasomotor instability, as evidenced by the phenomena present in other parts of the body. The vascular tone is lowered and venous stasis is apt to occur. In healthy persons the altered state of the circulation on changing from the recumbent to the erect posture is promptly regulated by the normally acting vasomotor centres and nerves. In others, the subjects of orthostatic albuminuria, the vasomotor centres and nerves are not working normally, and they fail to act promptly under the changed conditions, with the result that venous stasis occurs in the kidneys. This temporarily alters the nutrition of the glomerular epithelium, and albumin transudes. The above represents what may be called the prevailing views as to the conditions present in the production of orthostatic albuminuria.

Following up this line of thought, we may suggest that at the same time the kidneys are surcharged with blood, and, therefore, heavier than under normal conditions. For the production of mobility of the kidney, apart from traumatism, we must assume one of two things, either that the supporting tissues are weakened or that the weight of the kidney is increased. Under a change of position, as from the recumbent to the erect posture, the effect of one or other of these factors will be a descent of the kidney from the normal situation. There was no evidence in the above cases, as already stated, that any weakening of the supporting tissues was present, and we therefore fall back on the second alternative. The daily surcharging of the kidneys with venous blood when the patient assumes the erect posture, and the increased weight which follows, may in time tell on the renal supports and induce a certain progressive degree of mobility.

The third feature in these cases which has been referred to, namely, the abnormal pulsation of the abdominal aorta, is another evidence of lowered vascular tone, and a similar pulsation is probably present in the renal arteries. As an illustration, one might refer to the condition of the thyroid gland in Graves' disease, with its pulsating arteries, its tissues surcharged with blood, its weight increased, and its secretion altered. Nor is this simply an illustration, for in Graves' disease, if the cardiovascular disturbances are well marked, it will be found that movable kidney and abnormal pulsation to the abdominal aorta are usually present, and that orthostatic albuminuria is not uncommon.

The subject of orthostatic albuminuria has not received much attention in England within recent years, and I have not been able to find any references to its association with movable kidney. In French medical circles orthostatic albuminuria has been a good deal discussed. In 1900 Dr. Bourcy[1] recorded two cases and stated regarding one of them, a youth, aged nineteen years, that physical examination showed nothing abnormal, save a very pronounced mobility of the right kidney, which was neither painful nor enlarged. He mentions this fact without further comment, but it seems to have attracted the notice of Dr. Niviere,[2] who in 1901 published the case of a young man, aged twenty years, with orthostatic albuminuria and mobility of the right kidney. He ordered a flannel belt to be worn, and under this treatment the albuminuria disappeared, save when the belt became slack or failed to support the abdominal wall. He concludes that in this case a stasis of blood in the kidney was due to the renal mobility; but that for the production of the albuminuria in the erect posture there must also have been some special sensitiveness in the kidney, probably as the result of scarlet fever in early life. This case is extremely interesting, but it might prove misleading if an impression got abroad—for which the author would not be responsible—that orthostatic albuminuria with movable kidney can be cured by the application of an abdominal belt. Even in Dr. Niviere's case the patient was examined only on some seven occasions during a period of eight months, and thus the test was far from being conclusive in an affection so variable in its occurrence as orthostatic albuminuria. Before the appearance of this paper I had frequently tried the effect of tightly bandaging the abdomen before the patient rose from bed, but had failed to produce any marked result. I have repeated these trials since, the abdomen being tightly bound with surgical strapping, and above that an elastic bandage. In some of the cases the albumin did not always appear after the patient rose from bed, as will happen quite apart from any bandaging in such cases, but in none did a complete cessation of the albuminuria take place on repeated trials. It is evident that no patient could tolerate for a day the amount of pressure necessary to secure absolute fixation of the kidney. From my own experience I do not think that the result obtained by Dr. Niviere will be often reproduced in other cases. The question as to how far, if at all, the mobility of the kidney affects the occurrence of the albuminuria in these cases might be definitely settled if a patient were surgically treated by fixation of the kidney to the abdominal wall. In none of my own patients has there been the slightest indication for such treatment. In the mild as well as in the more severe cases the application of a broad, firm bandage of flannel around the abdomen is undoubtedly beneficial, both as regards the albuminuria and the symptoms associated with movable kidney. It is best applied outside a combination undergarment, to which it can be pinned so as to prevent upward or downward displacement. With this protection the child's natural romping and running may continue without risk of harm; but any severe or prolonged muscular exercise, or fatigue from any cause, is to be carefully avoided. In addition to these local measures it is necessary to supervise carefully the dietary, the amount of school work, the recreations, and the home surroundings, for the patients are of unstable nervous equilibrium, and are at a developmental period when much and permanent harm may accrue if the individual requirements are not carefully studied and treated.

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[1] Bull. et Mém. des Hôp. de Paris, 1900, No. 21.

[2] Ibid., 1901, No. 6, p. 148.

COLD AS A CAUSAL FACTOR IN THE BLOOD CHANGES DUE TO HIGH ALTITUDE.

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In an earlier paper[1] the writer called attention to the fact that the increased counts of red corpuscles in the blood due to high altitude are temporary, contrary to the generally accepted opinion that the blood counts in high altitudes are practically normal or at most only slightly above. At least such is the case for the moderately high altitude of five thousand feet.

Up to the present time no satisfactory explanation for these altitude changes has been offered. The more commonly accepted theory is,

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[1] Bulletin Hadley Climatological Laboratory, vol. iii., No. 3.